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Predictors of breast and cervical cancer screening among vietnamese immigrant women

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Anh B. Nguyen, Master of Arts in Psychology, University of Richmond, 2006.

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Although practicing preventative healthcare is an important part of a healthy lifestyle, some high-risk populations do not engage in preventative screenings for cancer. Vietnamese American women constitute a high-risk group in gynecological cancers, and it was hypothesized that tenure, acculturation, health insurance, a regular source of care, education, employment status, and marital status would affect rates of cancer screening. It was also hypothesized that the Vietnamese population would have different trends and behaviors as compared to the general Asian population. Another topic of speculation was whether cervical cancer screening and breast cancer screening constituted as independent dimensions of cancer screening behavior or if they were a part of a general dimension of behavior. 70 Vietnamese immigrant women from the metropolitan area of Richmond completed surveys that accessed demographic variables, frequency and intention of receiving mammogram and Pap tests, and acculturation. Results show that the Vietnamese population had marked differences in behaviors influential of cancer screening. Marital status, health insurance, gender of the physician, possession of a regular source of care, and employment status were found to be significant predictors of previous receipt of mammograms and Pap smears. Acculturation, length of tenure, and age of immigration were found to be significant predictors of intent to get a mammogram or a Pap smear. Breast cancer and cervical cancer screening were found to constitute a general dimension of cancer screening behavior.

I certify that I have read this thesis and find that, in scope and in quality, it satisfies the requirements for the degree of Master of Arts.

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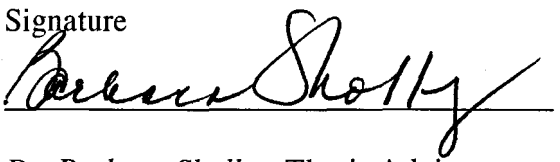

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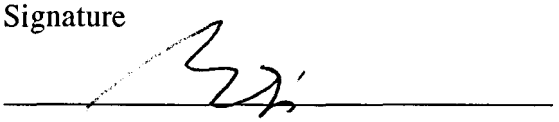

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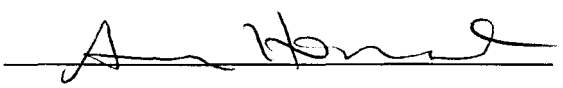

Dr. Amy Howard, Committee Member

PREDICTORS OF BREAST AND CERVICAL CANCER SCREENING AMONG VIETNAMESE IMMIGRANT WOMEN

By

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Predictors of breast and cervical cancer screening among Vietnamese immigrant women

One of the most difficult issues to address in the field of preventative health is health disparities across different groups because underserved populations are often understudied; developing outreach mechanisms to underserved populations for breast and cervical cancer screening remains a key issue concerning health disparities. Health disparities exist when one population has a higher occurrence or mortality rate for a specific illness, or when survival rates are lower for a particular population (Loerzel & Bushy, 2005). Although practicing preventative healthcare is an integral and vital part of a healthy lifestyle, some high-risk populations do not adhere to preventative screenings for cancer. Why do those vulnerable populations neglect health and prevention services when the stakes are high?

Incidence, Mortality, and Prevention of Female Cancers

Breast and cervical cancer comprise two of the three worldwide leading types of cancer among women. Breast cancer accounts for approximately 15% of cancer deaths (Wingo, Ries, Giovono, et al., 1999), and cervical cancer accounts for approximately 10% of cancer deaths (Parkin, Pisani, & Ferlay, 1999). According to current incidence and mortality estimates, approximately one in eight U.S. women will be diagnosed with breast cancer in her lifetime, and one in thirty will die from this disease (Ries et al., 2000). Additionally, an estimated 12,000 U.S. women will be diagnosed with cervical cancer each year (American Cancer Society, 2005).

Women can undergo cancer screening for the detection of breast or cervical cancer.

Early detection of breast cancer through mammography and cervical cancer through Papanicolau (Pap) tests improves a woman's chance of survival. The American Cancer Society (ACS) has established screening guidelines for numerous kinds of cancers. ACS screening guidelines for the early detection of breast cancer recommend that asymptomatic women over the age of 40 receive an annual mammogram and a monthly clinical breast exam (CBE), and women between the ages of 20 and 39 should receive a CBE every three years. ACS screening guidelines for cervical cancer recommend that women begin annually screening Pap tests three years after starting vaginal intercourse, or by the age of 21. (American Cancer Society, 2005).

High Risks Associated with Minority and Underserved Populations

In 1998, 67% of all women in the U.S. over 40 years of age reported utilizing mammograms in the previous two years for breast cancer screening (US Department of Health and Human Services, 2000). However, breast cancer screening rates varied across different ethnic groups. White women had the highest rates (72%), African Americans were the second highest (68%), and Hispanics/Latinas followed (63%), Asian /Pacific Islanders followed (53%), and American Indian/Alaskan Natives had the lowest rates (52%) (American Cancer Society, 2005). Similarly, cervical cancer screening rates varied across different ethnic groups. African American women had the highest rates of screening (84%), White women were the second highest (82%), Hispanics/Latinas and American Indian/Alaskan Natives followed (77%), and Asian/Pacific Islanders had the lowest percentage (67%) (American Cancer Society, 2005).

Many underserved populations are commonly high-risk groups for breast and

cervical cancer, and they tend to be individuals with lower socioeconomic status. Twenty percent of households in America report an annual income below $25,000 (US Census Bureau, 2005). Overall, racial and ethnic minorities are more likely to have lower socioeconomic status than Whites (Sebastian & Bushy, 1999). Ethnic minorities are grossly overrepresented among the poor: African Americans (23%), Asian/Pacific Islanders (10%), Latinos (21%), and Native Americans (32%) live below the poverty line (US Census Bureau, 2005).

Women of lower socioeconomic status and minorities are underserved and underscreened for breast and cervical cancers. Mammography utilization is found to be significantly associated with race, education, income, and employment: minority women, women with less than a high school education, women who were out of work, and women with incomes less than $20,000 per year were less likely to report having a mammogram in the past 2 years (Barret & Legg, 2005.) Being unmarried was also another predictor of lower cancer screening rates (Carraosquillo & Pati, 2004).

Among the general U.S. population, having health insurance and a usual source of care (having a consistent physician) are two of the strongest correlates of receiving cancer screening services (Mandelblatt, Yabroff, & Kerner, 1999). Because women of low SES and minorities have lower rates of health insurance or a usual source of care, they are less likely to receive cancer screening services. One study found that half of recent immigrant women were uninsured, and that only 73% reported having a Pap test or mammogram within the previous two years as compared to the 89% of U.S.-born women; however, differences in rates of cancer screenings between immigrant women

and U.S.-born women were significantly attenuated when rates of having health insurance or a usual source of care were controlled (Carrasquillo & Pati, 2004).

Because cancer survival rates are more prevalent in cases with early detection, those who are diagnosed at later stages suffer from higher mortality rates. When breast cancer is diagnosed while it is still localized in the breast, five-year survival rate is 96.5% (Ries, Eisner, Kosary, Hankey, Miller, Clegg, & Edwards, 2000). When breast cancer is diagnosed by the time the disease has spread to the lymph nodes, the prognosis is poorer and the five-year survival rate falls to 77%, and if it has spread to distant organs, the five-year survival rate diminishes to 21%. Although White women have the highest incidence of breast cancer, African American women suffer from the highest mortality rate of breast cancer. After five years of diagnosed breast cancer, survival rates for White women (88%) are higher than survival rates for African American women (74%) (American Cancer Society, 2005). One explanation for the discrepancies in survival rates may be due to the fact that African American females are diagnosed in more advanced and later stages of breast cancer as compared to White females (Chu, Lamar, & Freeman, 2003). There is also a similarly observed trend with cervical cancer rates. Although Latino women have the highest incidence of cervical cancer, African American women have the highest mortality rate for cervical cancer. This discrepancy may also be explained by the possibility that African American women are diagnosed in later stages of cervical cancer than Latino women (American Cancer Society, 2005).

Most cancer research that focuses on ethnic minorities and underserved samples are insufficient (Ashing-Gwia, Kagawa-Singer, Padillla, Tejero, Hsiao, Chhabra, Martinez,

& Tucker, 2004). A lot of cancer research on ethnic minorities focuses on epidemiological issues, such as incidence and mortality rates, and screening (Morgan, Behbakht, & Benjamin, 1996). Because of the vulnerability of these high-risk populations, future direction in research based on preventative health care should look beyond numbers and percentages of incidence and mortality of ethnic and underserved populations, and instead, focus on uncovering factors associated with cancer screening. We can focus on model plans of preventative healthcare tailored for a specific population only when we uncover hidden variables within a population that relate to cancer.

Cancer Screening Predictions Asian-American Women

The Asian American population is the most rapid-growing ethnic group in the United States. According to statistics, 11.9 million people identified themselves as Asian, comprising 4.2% of the total U.S. population (U.S. Census Bureau, 2005). With such large numbers, it is important to study this population as cancer is the leading cause of death for Asian American women (Asian American Network for Cancer Awareness, 2005). Statistics showed that cancer mortality rates of Asian American women jumped 240% between 1980 and 1993 (National Center of Health Statistics, 1996). Additionally, the mortality rate from all types of cancer in Asian American women alarmingly increased by 302% in 2001, which was the highest percentage increase for all U.S. ethnic/racial groups (Eberhardt, Ingram, & Makuc, 2001).

A study discovered that Asian-born women in the United States were more likely to develop tumors greater than 1 cm found in breasts than White or American-born women (Hedeen, White, & Taylor, 1999). The disproportion in tumor size may be related to the

fact that Asian immigrant women were more likely to receive a diagnosis in the advanced stages of breast cancer. These results are consistent with the literature that finds that women of low SES and minorities are usually diagnosed at a later stage of disease than women who regularly receive screening tests (American Cancer Society, 2005).

Demographic variables may have effects on cancer screening among Asian American women. Studies have shown that lack of financial means and lack of health insurance acted as barriers to mammography utilization in Asian American women (Lee et al., 1996; Sadler, Wang, Wang, & Ko, 2000). Women from lower SES levels were less likely to have health insurance, thus limiting opportunities for screening. Another significant correlate of mammography utilization was rate of tenure (residency in the United States); Asian immigrant women who have higher rates of tenure were more likely to adhere to breast screening procedures (Maxwell, Bastani, & Warda, 1997) as opposed to more recent immigrants.

Marital status is also strongly associated with cervical cancer screening. One study found that married Chinese immigrant women were seven times more likely to have received a Pap test in their life and over five times more likely to have received a recent Pap test than unmarried Chinese immigrant women (Do, Taylor, Yasui, Jackson, & Tu, 2001). The disproportion in screening rates is thought to be explained by the suggestion that unmarried Asian immigrants are less sexually active than unmarried U.S.-born women, and so these women may hold faulty perceptions that they are not at risk for cervical cancer or other gynecological diseases (Yi, 1994).

In identifying other predictors that led Asian immigrant women to regularly access

cancer screening check-ups, one significant barrier was the lack of English proficiency. Asian immigrant women who spoke English fluently were four times more likely to have had a mammogram than those with poor English fluency (Yu, Kim, Chen, & Britnall, 2001). Lack of English fluency may pose difficulties in scheduling appointments, interacting with health professionals, and getting vital information about free or low-cost cancer screening programs (Juon et al., 2004). In addition, another component of language may predict screening rates; Asian immigrant women who have female physicians and language concordance (language commonality between patient and physician) had higher rates of breast cancer screening (Tu, Yasui, Kuniyuki, Shcwartz, Jackson, Hislop, 2003).

Another critical predictor that may influence the utilization of cancer screening is knowledge of illness and guidelines. One study found that knowledge of mammography guidelines was the strongest correlate to having regular mammograms. Asian American participants who understood mammography guidelines were ten times more likely to have regular mammogram check-ups than participants who did not understand screening guidelines (Juon, Kim, Shankar, & Han, 2004). However, some women with proper knowledge of screening guidelines may still not follow standards for screening unless the knowledge is accompanied by physician recommendation (Tang, Solomon, and McCracken, 2000; Maxwell et al, 1997).

Cultural beliefs and attitudes are also associated with cancer screening practices. While it is important to minimize the costs and barriers to cancer screening for immigrant women, cultural barriers and personal attitudes also need to be addressed. Every culture

provides a model of health and illness that influences people's subjective interpretation and experience of illness, risk, and risk reduction. Meana, Bunston, George, Wells, and Rosser (2001) found that prior to arrival in North America, Asian immigrant women had either never heard of breast cancer or had considered it a very rare disease because they lacked education or exposure to the topic. They believed that an individual was more at risk for breast cancer if she had not breast-fed her children. The participants perceived the disease to be exclusively terminal and commonly cited that it was up to God whether or not they became ill when explaining why they did not engage in cancer screening practice. For some women, religious upbringing leads to a link between sense of shame and social stigmatization to breast cancer because it represents bad karma, divine retribution for past wrong-doings or sins, which ultimately leads some Asian immigrant women with breast cancer to live with the disease privately and secretly.

The majority of research data for immigrants has been grouped into the Asian American/Pacific Islander ethnic group category (Wu, Bancroft, & Guthrie, 2005). Most Asian immigrants are perceived to be part of a homogenous group, which leads to erring assumptions and generalizations to this population as a whole (Takada, Ford, & Lloyd, 1998). However, the truth is that the Asian population has many subset groups (such as Vietnamese, Korean, Indian, Chinese) who differ greatly. If differing Asian subsets have differences in language, religion, culture, and values, why wouldn't it be equally obvious that these subsets would vary in trends in health care as well? Studies in health need to take greater care in addressing issues to more specifically tailored populations as one group's needs will differ significantly from another group.

Vietnamese American Women: A Unique Population

In 2000, 28.4 million foreign-born persons resided in the United States. This immigrant population accounted for 10.4% of the total U.S. population (Lollock, 2001). Though Chinese Americans constitute the largest Asian subgroup in the US (2.4 million and 24% of total Asian population), the Asian Indian growth of 106 % in the last decade was unprecedented and the largest of any Asian sub-group. This was followed by the Vietnamese American community with an 83% growth rate and a total of 1.3 million in population (US Immigration Facts, 2004). The influx of entering Vietnamese immigrants has led to developments that enable these immigrants to form common cultural meeting grounds such as Vietnamese churches, markets, and clinics.

Though there have been a growing number of studies on healthcare utilization among immigrants that focus on the general Asian immigrant population, there has been scarce research specifically on Vietnamese immigrants and preventative health behavior. Nguyen and Sholley (2005) found that lack of financial resources, lack of insurance, and cultural barriers stood in the way of accessing health services, specifically preventative healthcare. Cervical cancer is the number one cancer to occur in Vietnamese women (Asian American Network for Cancer Awareness, accessed 2005), and it is important to study the trends in cancer screening in this population to promote preventative behavior. The present research aims to identify barriers to Pap smear and mammogram screening, among Vietnamese women and to see if these barriers were in agreement with current knowledge on the general Asian population.

Differences in Trends

It is important to highlight critical differences reflected between the Vietnamese American population and the total Asian American population that may imply differences in female cancer screening trends between the two populations. While 40 percent of the total Asian American population spoke English less than "very well," 62 percent of the Vietnamese American population was found to speak English less than "very well" (U.S. Census Bureau, 2005). As noted earlier, language fluency is often a measure of acculturation within a dominant culture, and as research has previously shown, lack of proficiency in language may pose as a barrier to cancer screening services among the Vietnamese.

In addition, 19.6 percent of the total Asian American population (25 and older) failed to attain a high school education, while a staggering 38.1 percent of Vietnamese Americans (25 and older) failed to attain a high school education (U.S. Census Bureau, 2005). As shown previously, one barrier to female cancer screening was having less than a high school education, and the disproportionate number of Vietnamese Americans possessing less than a high school education may be one reason why disparities in cancer screening exist.

In 1999, the median earned salary for female full-time, year-round workers for Asian Americans was $31,049. In contrast, the median earning salary for female, full-time, year-round workers for Vietnamese Americans was $24,028 (U.S. Census Bureau, 2005). The difference in salaries shows a difference in SES levels between the populations and as previously mentioned, women from lower SES levels are less likely to adhere to female cancer screening guidelines.

These are just some of the ways that Vietnamese Americans differ from trends found in the total Asian American population. It seems obvious that the aforementioned differences which pose as predictors in cancer screening would lead to lower rates of cervical and breast cancer screening.

Predictors of Pap Tests and Mammograms among Vietnamese American Women

Vietnamese American women constitute a high-risk group in gynecological cancers. Vietnamese American women are five times more likely to be diagnosed with invasive cervical cancer than their White counterparts. Cervical cancer is the most common form of malignancy among Vietnamese American women with an incidence rate of 43 per 100,000 while their White counterparts had an incidence rate of 8.7 per 100,000 (National Cancer Institute, 1996). Unfortunately, studies have shown that Vietnamese Americans have lower levels of reported Pap testing than any other racial or ethnic group (McPhee & Nguyen, 2000). National statistics show that 86.2% of White women, 85.2% of African-American women, and 78.1% of Hispanic women over 18 years of age reported receiving at least one Pap test within the past three years (Centers for Disease Control and Prevention, 2005). In contrast, 67% of Vietnamese American women reported receiving at least one Pap test in their lifetime (Jenkins, McPhee, & Bird, 1999). In regards to breast cancer, Vietnamese women are at a lower risk with an incidence rate of 37.5 per 100,000 while their white counterparts had a much higher incidence rate of 111.8 per 100,000 (Centers for Disease Control and Prevention, 2005). However, research has shown that as Vietnamese women become increasing accultured, their incidence rates of breast cancer increase as well (Ziegler, Hoover, Pike, et al., 1993).

In addition to the previous predictors for breast and cervical cancer screening among the general female population in the U.S. mentioned in the earlier part of this paper, research studies have found variables that may be stronger or unique in predicting screening among Vietnamese American women. Previous research has found predictors of cervical and breast cancer screening among Vietnamese American women to include marital status. Research has shown that married Vietnamese immigrant women were more likely to have received a Pap test within the last two years than Vietnamese immigrant women who have never been married (Taylor et al., 2004; McPhee & Nguyen, 2000). Having a regular source of care is also positively associated with cervical and breast cancer screening for Vietnamese women; women with a regular physician are twice as likely to have had a Pap test within the past two years than women without a regular physician (Taylor et al., 2004).

Perceptions and knowledge about health care may influence health behaviors. The perception of discrimination may also be a factor significantly associated with lower cervical and breast cancer screening. One study found that Vietnamese American women who perceived racial bias in the healthcare system were less likely to utilize Pap tests (Nguyen, McPhee, Nguyen, Lam, & Mock, 2002). In addition, Vietnamese American women may have deficits in knowledge about health that may adversely impact rates of breast and cervical cancer screening. One study found that 37% of the participants did not know that a suspicious breast lump could be cancerous or that irregular menstrual bleeding could be a sign of malignancy. Seventy-four percent of the participants also did not know that engaging in sex with multiple partners would lead to increased risks of

cervical cancer (Pham & McPhee, 1990). Perceptions about being at risk for breast or cervical cancer also lead to a positive relation for cancer screening behavior (Yi & Reyes-Gibby, 2002). Education about these diseases and screening guidelines may raise awareness and may improve rates of prevention and treatment.

Acculturation may also influence health behaviors among this population. In addition to language fluency, length of tenure is also one measure of acculturation. One study found that the length of residency was significantly related to breast cancer screening. Women who had lived in the United States for more than 5 years had a higher prevalence of having had a mammogram in comparison to women who had lived in the United States for less than 5 years (Yi & Reyes-Gibby, 2002).

The goal of the present research was to examine both breast cancer screening and cervical cancer screening among Vietnamese immigrant women as previous research has solely focused on one but not the other. The reasoning behind the focus on both breast and cervical cancer screening was to find whether Vietnamese immigrant women were deficient in general preventative behavior or whether the deficiencies are more specific. In addition, most of the previous research on Vietnamese immigrant women and cancer screening has been conducted on the West Coast, specifically California, and there is a paucity of research of this population in other areas. One must question whether trends by Vietnamese immigrant women may even differ from one geographical location to the next. Another goal of this study was to educate and inform Vietnamese women about breast and cervical cancer and appropriate screening behaviors.

It was predicted that Vietnamese immigrant women suffer from deficiencies in general preventative behavior as marked by similar low rates of breast and cervical cancer screening intention and receipt. It was also predicted that low SES, lack of health insurance, rate of tenure, marital status, acculturation, and knowledge of cancer screening will predict *intention* and *receipt* of breast and cervical cancer screenings.

Method

Participants

The study included 70 Vietnamese female immigrants who volunteered. Vietnamese female immigrants were recruited for this study initially using community leaders, priests and nuns from the Church of Vietnam on Patterson Avenue. After making initial contact, we were further able to recruit participants through associations. The strict criteria for participant selection were (1) participants must have emigrated from Vietnam to the U.S. for residency, and (2) participants must have currently resided in Richmond, Va. The distribution among the age groups was dispersed evenly with no one age group dominating the study: 18-24 (11.4%), 25-36 (35.7%), 37-45 (20%), 46-59 (20%), and 60+ (12.9).

Materials

Materials included questionnaires assessing demographic variables, frequency and intention of receiving mammogram and Pap tests, and acculturation among the participants. The surveys were available in English and Vietnamese. Questionnaires were completed on paper and pen provided by the researcher. Monetary reimbursement, ten dollars, for the participants was provided. After all surveys were completed, the

researcher translated the Vietnamese survey questions and answers into English.

Design and Procedure

Vietnamese female immigrants were recruited for this study initially using community leaders, priests and nuns from the Church of Vietnam on Patterson Avenue. We were fortunate to have these community liaisons working with us as they were able to recruit participants through service announcements and church bulletins. After making initial contact, we were able to recruit participants outside of the church community. We were able to ask participants to refer other participants for the study, and this allowed us to connect to individuals outside of the church.

After recruitment, the researcher visited these local community places and administered the surveys with the help of her father, a medical doctor whom the Vietnamese community recognizes and respects. Due to cultural reasons, the researcher's father's status as a male and as a doctor allowed the researcher to gain access into the very private community as it is often untrusting of outsiders. The researcher's female gender and young age would have hindered her ability to effectively gain community cooperation if she had entered this community on her own.

Participants were told that they were taking part in a study that measures predictors of mammogram and Pap test utilization and intention. Completed consent forms were attained before proceeding further with the study. Participants were then asked to complete surveys that accessed demographic variables, frequency and intention of receiving mammogram and Pap tests, and acculturation among the participants on pen and paper.

After completing the surveys, respondents were debriefed. It was explained that they participated in a study that measured predictors in mammogram and Pap test utilization and intention. They were then presented with forms that included the aims and purpose of the study and additional contact information if they had further questions or concerns. In addition, participants were also given forms that included brief background information about incidence rates and the risks associated with breast and cervical cancer. They were also presented with contacts for available resources that provide free or low-cost mammogram and Pap test services for those in need or with low-income. Participants were thanked and paid a monetary gift, ten dollars, for their participation in the study.

Results

Preliminary analyses were conducted to access demographic information of the participants. The mean age of immigration was 28.3 years (min = 8, max = 65). The mean length of tenure in the United States was 12.85 years (min = 1, max = 36). Descriptive analyses showed that 72.9% of the participants were married, 70% had health insurance, 80% were employed, and 32.9% had incomes considered to be below poverty level (below $8,500).

Previous research has suggested that education plays an important role in cancer-screening behavior. The sampling distribution shows that of those participants, 71% received education in the United States, 17.1% completed middle school, 25.7% completed high school, 24.3% completed college, and 4.3% completed

graduate or professional school. Participants who did not receive an education in the United States were asked to provide their highest completed grade in Vietnam (as equivalent to U.S. education), and results showed the mean highest completed grade in Vietnam was the equivalent of ninth grade in high school.

Initial zero-order correlations were conducted to access the degree of relationships among the underlying variables. The relationships and the accompanying significances are presented in Table 1. Due to the categorical nature of the variables, Cramer's v was used instead of the conventional Pearson's r in the correlation matrix. Marriage was significantly related to possession of a regular physician ($v = .305, p \leq .05$), receipt of mammogram ($v = .293, p \leq .05$), receipt of Pap smear ($v = .372, p \leq .05$), and intent to get a Pap smear ($v = .354, p \leq .05$). Possession of health insurance was significantly related to possession of a regular physician ($v = .677, p \leq .05$), receipt of mammogram ($v = .436, p \leq .05$), and receipt of Pap smear ($v = .31, p \leq .05$). Employment was significantly related to receipt of Pap smear ($v = .252, p \leq .05$) and intent to get a Pap smear ($v = .289, p \leq .05$). Having a regular physician was significantly related to receipt of mammogram ($v = .575, p \leq .05$), intent to get a mammogram ($v = .267, p \leq .05$), and receipt of Pap smear ($v = .469, p \leq .05$). Having an income below the poverty level was significantly related to receipt of a mammogram ($v = -.251, p \leq .05$) and receipt of Pap smear ($v = -.405, p \leq .05$). Receipt of a mammogram was significantly related to intent to get a mammogram ($v = .387, p \leq .05$) and receipt of a Pap smear ($v = .629, p \leq .05$). Intent to get a mammogram was significantly related to intent to get a Pap smear ($v = .415, p \leq$

.05). Receipt of a Pap smear was significantly related to intent to get a Pap smear (v = .384, $p \leq .05$).

According to self-reported measures, 45.7% of the participants had previously had a mammogram, 57% of the participants knew where to get a mammogram, and 54.3% of the participants were planning to get a mammogram. Approximately, 84.3% of the participants believed that all married women should have a mammogram, while 68.6% of the participants believed that all virginal women should have a mammogram.

According to self-reported measures, 58.6% of the participants had previously had a Pap smear, 61.4% of the participants knew where to get a Pap smear, and 64.3% of the participants were planning to get Pap smear. Approximately, 80% of the participants believed that all married women should have a Pap smear, while 68.6% of the participants believed that all virginal women should have a Pap smear.

The next phase of data analysis was the creation of predictive models to identify predictors of the four pre-assigned dependent variables: receipt of mammograms, receipt of Pap smears, intent of getting a mammogram, and intent of getting a Pap smear. Due to the categorical nature of the dependent variables and the dominating amount of categorical predictor variables, logit analysis was the most appropriate statistical procedure for the models used to predict receipt of mammograms and receipt of Pap smears. Fortunately, logit analysis is relatively free of the assumptions that are required for interdependence techniques and remains robust due to the extension of the chi-square with emphasis on frequency measures and cell counts. Very similar to loglinear analysis, the underlying logic behind logit analysis is to start with a saturated model that is a

perfect fit for the data at hand due to the exhaustive use of all possible combinations of effects. Using the backward elimination procedure, higher order interactions and associations are removed from the model until the most parsimonious model can account for the most variance as measured by a goodness-of-fit measure such as the likelihood ratio or $G\_$.

For the models used to predict intent of getting a mammogram or intent of getting a Pap smear, logistic regression was the most appropriate statistical analysis as the dependent variable was binary coded, and the predictor variables were both categorical and continuous in nature. The forward method was used to determine what predictor variables were to be included in the regression equation.

Predictive Model for Receipt of a Mammogram

The first aim was to find a good fitting model to predict the pre-assigned dependent variable, receipt of a mammogram. Receipt of a mammogram was a binary coded variable (yes = 1, no = 2) in which respondents were asked "*have you ever had a mammogram?*" Forty-five percent (32 out of 70) of the participants had previously had a mammogram. In order to increase validity of the study, the inclusion of the question "*have you ever heard of a mammogram?*" served as a filter question. Those who answered "*no*" were not computed into the final logit analysis of receipt of mammogram for obvious reasons; 81.4% (57 out of 70) of the respondents answered "*yes*" and their answers were included in the model. The predictors included in the model for receipt of mammogram were possession of a regular physician, sex of the physician, employment,

marital status, and health insurance. The Goodness-of-Fit Tests revealed $G\_ = 2.913, p = 1.00$. The entropy value was .350.

Parameter estimates showed that sex of the physician was the most important predictor of whether the respondent had previously received a mammogram. Refer to Table 2 for other parameter estimates and their respective weights in the accessed model.

Follow-up chi-square analyses were conducted to examine the relationship between the predictors (employment status, health insurance, marital status, regular physician, and sex of physician) and the dependent variable (receipt of mammogram) used in the logit analysis. Table 3 illustrates the results of the chi-square analyses and the respective frequencies.

As Figure 1 illustrates, the following relationship between the variables violates the assumption of linearity. As the residual plot suggests, the model is more accurately portrayed as a curve-linear relationship, explaining why logit analysis would deflate the weight of certain predictors that appear strong in the exploratory analyses. The follow-up chi-square analyses highlight the significant relationships between the predictors and the dependent variable, receipt of a mammogram. The relationship between possession of health insurance and receipt of a mammogram was significant, $\_\_ = 8.595, p \leq .05$. Individuals who had health insurance were more apt to have received a mammogram (n = 27) in comparison to those who did not have health insurance (n = 5). The relationship between possession of a regular physician and receipt of a mammogram was significant, $\_\_ = 18.846, p \leq .05$. Individuals who had a regular physician were more apt to have received a mammogram (n = 29) in comparison to those who did not have a regular

physician (n = 3). The relationship between gender of a regular physician and receipt of a mammogram was significant, __ = 7.251, $p \leq .05$. Individuals who had a male regular physician were more apt to have received a mammogram (n = 20) in comparison to those who had a female regular physician (n = 9).The relationship between employment and receipt of a mammogram was not significant, __ = 1.99, $p \geq .05$. Individuals who were employed were just as likely to have received a mammogram (n = 28) in comparison to those who were employed but did not receive a mammogram (n = 4). The relationship between marital status and receipt of a mammogram was significant, __ = 4.809, $p \leq .05$. Individuals who were married were more likely to have received a mammogram (n = 29) in comparison to those who were not married (n = 3). Though logit analysis provided a good fitting model, it was unable to capture a more accurate contribution of the predictors due to some low cell frequencies even when a .5 constant was added to the overall model to escape zero frequency cell counts. Thus, results should be interpreted with caution as this model does not clearly demonstrate a linear relationship; the presence of some variables may increase the rate of the criterion variable, but the absence of the same variables does not equally decrease the rate of the criterion variable. For example, those who had health insurance, had a regular physician, or were married had *much higher rates of mammogram screening* than those who did not have health insurance, nor a regular physician, nor were married. However, those who had health insurance, had a regular physician, and were married had *similar or higher rates of never having a previous mammogram* as compared to those who did not have health insurance, did not have a regular physician, or were not married. If a linear relationship existed, the former

should have much lower rates of never having a previous mammogram in comparison to the latter.

Predictive Model for Receipt of a Pap Smear

The next predictive model of focus was for the criterion variable, receipt of a Pap smear. Receipt of a Pap smear was a binary coded variable (yes = 1, no = 2) in which respondents were asked, "*have you ever had a Pap smear*?" Fifty-eight percent (41 out of 70) of the respondents answered, "*yes*." In order to increase validity of the study, the inclusion of the question "*have you ever heard of a Pap smear?*" served as a filter question. Those who answered "*no*" were not computed into the final logit analysis of receipt of a Pap smear for obvious reasons; 81.4% (57 out of 70) responded that they had heard of Pap smears, and their answers were included in the model. The predictors used in the model for the receipt of Pap smears were possession of a regular physician, sex of the physician, employment, marital status, and health insurance. The Goodness-of-Fit Tests revealed $G\_ = 8.50, p = 1.00$. The entropy value was .243. Parameter estimates show that the weighted estimates of the parameters were relatively similar to one another. Refer to Table 5 for the appropriate estimates and significance levels for the predictors of receipt of Pap smears.

Follow-up chi-square analyses were conducted to examine the relationship between the predictors (employment status, health insurance, marital status, regular physician, and sex of physician) and the dependent variable (receipt of a Pap smear) used in the logit analysis. Table 6 illustrates the results of the chi-square analyses and the respective frequencies.

As Figure 2 indicates, the following relationship between the variables violates the assumption of linearity. As the residual plot suggests, the model is more accurately portrayed as a curve-linear relationship, explaining why logit analysis would deflate the weight of certain predictors that appear strong in the exploratory analyses. The follow-up chi-square analyses highlight the significant relationships between the predictors and the dependent variable, receipt of a Pap smear. The relationship between possession of health insurance and receipt of a Pap smear was significant, __ = 4.326, $p \leq .05$. Individuals who had health insurance were more apt to have received a Pap smear (n = 32) in comparison to those who did not have health insurance (n = 59). The relationship between possession of a regular physician and receipt of a Pap smear was significant, __ = 12.556, $p \leq .05$. Individuals who had a regular physician were more apt to have received a Pap smear (n = 33) in comparison to those who did not have a regular physician (n = 8). The relationship between gender of a regular physician and receipt of a Pap smear was non-significant, __ = 2.644, $p \geq .05$. Individuals who had a male regular physician were just as likely to have received a Pap smear (n = 20) in comparison to those who had a female regular physician (n = 14).The relationship between employment and receipt of a Pap smear was significant, __ = 3.620, $p \leq .05$. Individuals who were employed were more apt to have received a Pap smear (n = 35) in comparison to those who were not employed (n = 6). The relationship between marital status and receipt of a mammogram was significant, __ = 7.751, $p \leq .05$. Individuals who were married were more likely to have received a mammogram (n = 36) in comparison to those who were not married (n = 5). Though logit analysis provided a good fitting model, it was unable to

capture a more accurate contribution of the predictors due to some low cell frequencies even when a .5 constant was added to the overall model to escape zero frequency cell counts, similar to the problem encountered with the model for receipt of mammogram. Thus, results should be interpreted with caution as this model does not clearly demonstrate a linear relationship.

Predictive Model for Intent to Get a Mammogram

The next aim was to find a good fitting model to predict the pre-assigned dependent variable, intent to get a mammogram. Intent to get a mammogram was a binary coded variable (yes = 1, no = 2) in which respondents were asked, "*are you planning to have a mammogram?*" Fifty-four percent (38 out of 70) of the respondents answered "*yes.*" Logistic regression was chosen for this model. The predictors used in the logistic regression model for intent to get a mammogram were marital status, having of a regular physician, rate of acculturation, knowledge of where to get a mammogram, age of immigration to the United States, and length of tenure. The predictor variables were added into the regression equation using the forward method. The Omnibus test of model coefficients revealed __ = 12.303, $p \leq .05$, supporting the significance of the model. The Nagelkerke test showed $R\_$ = .532 which was very high; however, the number should be interpreted with caution as it is a "pseudo" $R\_$ and does not capture the same illustrative information about variance like the $R\_$ used in regular regression. Three predictor variables proved to be significant in the regression analysis: rate of acculturation, length of tenure, and knowledge of where to get a mammogram. See Table 4 for the variable weights and significance.

Predictive Model for Intent to Get a Pap Smear

The final predictive model of focus was for the criterion variable, intent to get a Pap smear. Intent to get a Pap smear was a binary coded variable (yes = 1, no = 2) in which respondents were asked, "*are you planning on getting a Pap smear?*" Sixty-four percent (45 out of 70) of the respondents answered "*yes.*" Logistic regression was chosen for this model instead of logit analysis because the criterion variable was categorical, but some of the predictor variables were categorical in nature while other predictor variables were continuous. The predictors used in the logistic regression model for intent to get a Pap smear were marital status, possession of a regular physician, rate of acculturation, knowledge of where to get a Pap smear, age of immigration to the United States, and length of tenure. The predictor variables were added into the regression equation using the forward stepwise method. The Omnibus test of model coefficients revealed __ = 31.438, $p \leq .05$, supporting the significance of the model. The Nagelkerke test showed R_ = .716. Two predictor variables proved to be significant in the regression analysis: length of tenure and knowledge of where to get a Pap smear. See Table 7 for the variable weights and significances.

Discussion

The hypothesis that Vietnamese immigrant women suffer from deficiencies in cancer screening behavior in both mammograms and Pap smears was supported by the data. Forty-five percent of the participants in the study had previously received a

mammogram which was lower than national rates for different racial or ethnic groups: Caucasians (72%), African-Americans (68%), Hispanics/Latinas (63%), Asian/Pacific Islanders (53%), and American Indian/Alaskan Natives (52%) (American Cancer Society, 2005). Fifty-eight percent of the participants in the study had previously received a Pap smear which was low compared to national rates for different racial and ethnic groups: African-Americans (84%), Caucasians (82%), Hispanics/Latinas (77%), American Indian/Alaskan Natives (76%), and Asian/Pacific Islanders (67%) (American Cancer Society, 2005).

One issue of interest was whether Vietnamese women should be considered as a part of a homogenous Asian population or as an individual Asian sub-set. The results showed that this is a unique population with unique trends in cancer screening behaviors and demographic variables that potentially serve as predictors for cancer screening behaviors. The results show that the participants had much lower rates of mammogram and Pap smear screening as compared to national rates for the Asian population. Seventy percent of the participants had health insurance as compared to 83% of the total Asian population in the United States (U.S. Census Bureau, 2005). In addition, 32.9% of the participants had incomes that were considered to be below poverty level as compared to the 13.7% national rates for Asian women. According to Census Data, 62% of all Asian women in the United States are married while 72.9% of the participants were married. Census data also reveal that 85% of the Asian population has attained a high school education in comparison to the 54% of the participants. In addition, 5.6% of the total female Asian population was unemployed as compared to the 20% of the participants.

The numbers support differences in demographic trends for the Vietnamese participants when compared to national rates for the total Asian population in the United States. The results show that there should be an increased focus on studying Asian subsets as unique populations rather as one homogenous group. Different trends and emerging patterns in Asian subsets can lead to different outcomes in preventative health behaviors, and it is important to tailor unique strategies and approaches to improve these behaviors for each population. For example, Vietnamese immigrant women tend to have lower rates of education as compared to the total Asian population, so methods should focus on increasing the awareness of the importance of education and encouraging the completion of at least a high school education as it is related to increased knowledge of health and diseases.

The results from the study suggested that breast cancer screening and cervical cancer screening among Vietnamese immigrant women are not two separate dimensions of prevention but are intertwined into one general preventative cancer screening behavior. Both models for receipt of breast and cervical cancer screening had similar predictors, and both models for intent of getting a mammogram and a Pap smear had similar predictors. In addition, receipt of mammograms and Pap smears were significant correlates as well as intent of getting a mammogram and a Pap smear. The results of this study show that Vietnamese immigrant women have marked deficiencies in general preventative healthcare in female cancers. Further research should focus on whether these deficiencies occur in general preventative behaviors concerning all cancers.

The factors that predicted receipt of breast and cervical cancer screening for Vietnamese immigrant women were possession of health insurance, marital status, employment, possession of a regular physician, and sex of the physician. However, the results should be interpreted with caution as the relationship between the predictors and receipt of cancer screening tests is not linear in nature. The implications of the curve-linear relationship suggest that concentration should move away from the question "what leads to the receipt of mammograms or Pap smears" and rather, future studies should address the question, "what is preventing women with available resources from receiving mammograms and Pap smears?" Target aims should focus on finding out what stands in the way of Vietnamese immigrant women accessing these health resources. One possible explanation may be cultural factors or beliefs that obstruct preventative healthcare. The results show that many participants believed that married women should have a mammogram or a Pap smear and that fewer participants believed that virginal women should have a mammogram or Pap smear. Increasing knowledge and awareness of female cancers may provide one solution in increasing preventative health care behaviors among this population.

The factors that predicted intent of getting a mammogram or Pap smear for Vietnamese immigrant women were age of immigration, acculturation, and knowledge of where to get the cancer screening. As the models suggest, the factors that influence previous behavior are not necessarily the same factors that influence intent of behavior. The factors that predicted intent of behavior were related to acculturation and knowledge of preventative healthcare. The results show that the relationship between intent of

behavior and previous behavior was significant albeit modest. The results showed that many participants believed that virginal women were not at risk unlike married women from getting cervical or breast cancers. Because behavioral beliefs influence the perceived consequences of a behavior, false beliefs that certain women are protected from female cancers can reduce preventative behaviors. Immigrant women who are less acculturated may suffer from deficiencies in cancer screening behaviors simply because they lack the behavioral beliefs to motivate a healthier lifestyle. Educational programs should target these cultural beliefs that may prevent engaging in cancer screening.

The limitations of the study included a small sample size and a small region of focus. Further studies should aim to increase the number of participants and to compare different behaviors and intentions of Vietnamese immigrants from different areas. Vietnamese immigrants in regions on the West coast may have entirely different cultural beliefs or rates of acculturation as compared to Vietnamese immigrants on the East coast. Future studies should also aim to incorporate a more systematic model to measure the relationships between knowledge or awareness of cancers and preventative behaviors and actual behavior. The more precisely we can identify the barriers that stand in the way of preventative lifestyles, the better we can help this immigrant population.

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Table 1
Correlation Matrix of Design Variables

Variable	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
1. Married?	1	.18	.126	.305*	.562	-.105	293*	.148	.372*	.354*
2. Health insurance ?		1	.241	.677*	.445	-.082	.436*	.261	.31*	.104
3. Employed ?			1	-.06	.573	-.107	-.059	..219	.252*	.289*
4. Regular physician?				1	.166	-.242	.575*	.267*	.469*	.215
5. Sex of regular physician?					1	.335	.007*	.972	.104	1.88
6. Income below poverty level?						1	-.251*	.085	-.405*	1.85
7. Receipt of mammogram?							1	.378*	.629*	.195
8. Intent to get mammogram?								1	.169	.415*
9. Receipt of Pap smear?									1	.384*
10. Intent to get Pap smear?										1

* denotes significance at $p \leq .05$

Table 2
Parameter Estimates for Receipt of Mammogram

Variable	Parameter Estimate	Z-score	Significance
Receipt of Mammogram (constant)	-21.174	-8.10	.000
Employment	-.439	-.337	.736
Health Insurance	.811	.367	.714
Marital Status	1.23	.846	.397
Regular Physician	0		
Sex of Physician	3.2	2.55	.011

Table 3
Chi-Square Frequencies for Predictors of Receipt of

		Have you ever had a mammogram?		Total	Pearson Chi-Square Value	Sig.
		Yes	No			
Do you have health insurance?	**Yes**	27	12	39	8.595	.003
	No	5	13	18		
Do you have a regular physician?	**Yes**	29	9	38	18.846	.000
	No	3	16	19		
Is your physician a male?	**Yes**	20	2	22	7.251	.007
	No	9	8	17		
Are you employed?	**Yes**	24	20	44	.199	.655
	No	8	5	13		
Are you married?	**Yes**	28	15	43	4.809	.028
	No	4	9	13		

Table 4
Variable Weights for Intent to Get a Mammogram

Variable	B	S.E.	Significance
Intent to Get a Mammogram (constant)	-6.011	2.267	.008
Acculturation	.421	.164	.010
Age of Immigration	.063	.029	.030
Knowledge of Where to Get a Mammogram	-2.016	.815	.013

Table 5:
Parameter Estimates for Receipt of Pap Smear Model

Variable	Parameter Estimate	Z-score	Significance
Receipt of Pap smear (constant)	13.183	7.180	.000
Employment	1.965	1.456	.145
Health Insurance	0		
Marital Status	1.273	.837	.403
Regular Physician	0		
Sex of Physician	2.782	1.759	.079

Table 6
Chi-Square Frequencies for Predictors of Receipt of Pap Smear

		Have you ever had a Pap smear?		Total	Pearson Chi-Square Value	Sig.
		Yes	No			
Do you have health insurance?	**Yes**	32	8	40	4.326	.038
	No	9	8	17		
Do you have a regular physician?	**Yes**	33	5	38	12.556	.000
	No	8	11	19		
Is your physician a male?	**Yes**	20	1	21	2.644	.104
	No	14	4	18		
Are you employed?	**Yes**	35	10	45	3.620	.057
	No	6	6	12		
Are you married?	**Yes**	36	8	44	7.751	.005
	No	5	7	12		

Table 7
Variable Weights for Intent to Get a Pap Smear Model

Variable	B	S.E.	Significance
Intent of Getting a Pap Smear (constant)	-8.325	2.972	.005
Age of Immigration	.269	.095	.005
Knowledge of Where to Get a Mammogram	-3.165	1.508	.036

Figure 1

Normal Plot of Adjusted Residuals for Receipt of Mammogram Model

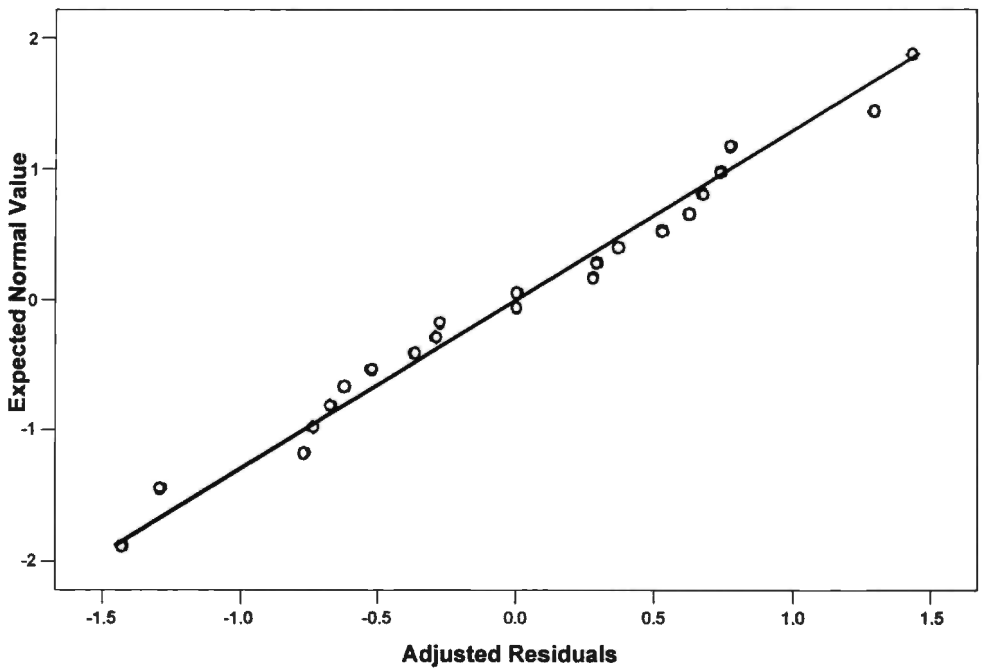
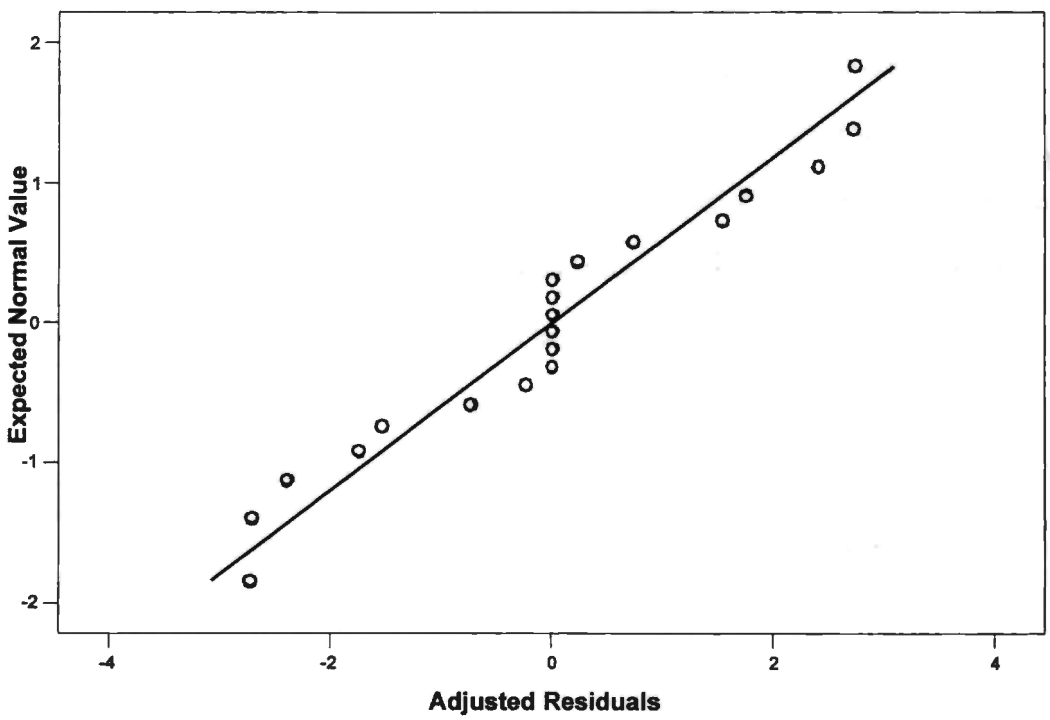


Figure 2
Normal Plot of Adjusted Residuals for Receipt of Pap Smear Model



Appendix A

Consent Form Given to Participants

The purpose of this study was to examine the current knowledge and utilization of mammograms and Pap tests among the female Vietnamese immigrant population and what existing barriers may stand in the way of accessing these services. Your participation in this study involves completing questionnaires that will address these questions. Each session should last approximately 15-20 minutes. The principle investigator is Anh Nguyen, and she is being supervised by Dr. Barbara Sholley. Should you have any questions or concerns, feel free to address them to the investigator. Your participation in this project is voluntary and you are free to withdraw your consent and discontinue participation in the study at any time. Confidentiality and privacy is guaranteed. This consent form will not be linked to your responses on the questionnaires. Your name will appear only on this consent form; it will not appear on any of the questionnaires. If you have questions concerning your rights as a research subject, you may contact the Chair of the University of Richmond's Institutional Review Board for the Protection of Research Participants at 804 289 8417.

The study has been described to me and I understand that my participation is voluntary and that I am free to withdraw my consent and discontinue my participation in the project at any time without penalty. I understand that if I have any questions or concerns, I may address them to the principle investigator or supervisor at the following address: Anh.Nguyen@richmond.edu, BSholley@richmond.edu.

I have read and understand the above information and give my consent to participate.

_____ _____

Signature Date

_____

Signature of Investigator

Appendix B

Debriefing Form Given to Participants

Thank you for your time and participation in this study that assessed knowledge and utilization of mammograms and Pap tests. The purpose of this study was to examine the current knowledge and utilization of health service providers by the Vietnamese immigrant population and what existing barriers may stand in the way of accessing these services. If you would like to receive a copy of the results of this study or have any questions, please contact the principle investigator or the supervisor of this experiment:

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Appendix C

Questionnaire Given to Participants

Instructions: Read all the following statements and answer to the best of your knowledge.

1. What is your age? (check one please)

____ (18-24) ____(25-36) ____(37-45) ____(46-59) ____(60 and above)

2. How old were you when you immigrated? ____(years)

3. What is your highest completed level of education? (check one please)

____(middle school) ____(high school) ____(college)

____(graduate/professional school)

or please give the last completed grade that you finished in Vietnam _____

4. Are you married? ____(yes) ____(no)

If you answered no, are you widowed? ____(yes) ____(no)

Are you divorced? ____(yes) ____(no)

5. Do you have health insurance? ____(yes) ____(no) ____(I don't know)

If you answered yes, is it an HMO? ____(yes) ____(no) ____(I don't know)

Does it include coverage for mammograms? ____(yes) ____(no)

____(I don't know)

Does it include coverage for Pap smears? ____(yes) ____(no)

____(I don't know)

Does it include coverage for yearly gynecological visits? ____(yes) ____(no)

____(I don't know)

6. Are you currently employed? ____(yes) ____(no)

7. Do you have a regular physician? ____(yes) ____(no)

If you answered yes, does your physician recommend breast or cervical cancer screenings?

____(yes) ____(no)

What is the sex of you physician? ____(male) ____(female)

7. Is your income less than $8,959 a year? ____(yes) ____(no)

What is your household income? (please check one)

____ ($8,959 - $20,000) ____ ($20,001 - $50,000) ____ ($50,001 - $70,000)

____($70,001 - $80,000) ____($80,001 - $150,000) ____ (over $150,000)

8. How many years have you resided in the United States? _____ years

9. How do you rate your use of the English language? (circle one)

(poor) 1 2 3 4 5 6 7 (excellent)

Instructions: Read all the following statements and answer to the best of your knowledge.

1. Have you ever heard of a mammogram? ____(yes) ____(no)

If you answered yes, please answer questions 2 through 6.

2. Do you know where to get a mammogram? ____(yes) ____(no)

3. Are you planning to have a mammogram? ____(yes) ____(no)

4. Have you ever had a mammogram? ____(yes) ____(no)

If so, are you up to date with your mammogram? ____(yes) ____(no)

5. Do you believe that all married women should have a mammogram?

____(yes) ____(no)

6. Do you believe that all virginal women should have a mammogram?

____(yes) ____(no)

7. Do you believe that all women should have a mammogram?

____(yes) ____(no)

8. Have you ever heard of a Pap test? ____(yes) ____(no)

If you answered yes, please answer questions 8 through 12.

9. Do you know where to get a Pap test? ____(yes) ____(no)

10. Are you planning to have a Pap test? ____(yes) ____(no)

11. Have you ever had a Pap test? ____(yes) ____(no)

If so, are you up to date with your Pap test? ____(yes) ____(no)

12. Do you believe that all married women should have a Pap test?

____(yes) ____(no)

13. Do you believe that all virginal women should have a Pap test?

____(yes) ____(no)

14. Do you believe that all women should have a Pap test?

____(yes) ____(no)

Appendix D

Acculturation Index

Instructions: Read each statement carefully and circle one answer that best applies to you.

1. My main spoken language is
   (a) English only 5
   (b) Vietnamese only 1
   (c) mostly English 4
   (d) mostly Vietnamese 2
   (e) both equally 3

2. How do you identify yourself?
   (a) American 3
   (b) Vietnamese 1
   (c) Vietnamese/American 2

3. Who do you associate with socially in the community?
   (a) mostly Vietnamese people 1
   (b) mostly non-Vietnamese people 3
   (c) both equally 2

4. What is your movie preference?
   (a) mostly Vietnamese movies 1
   (b) mostly American movies 3
   (c) both equally 2

5. Do you participate in Vietnamese occasions, holidays, traditions?
   (a) most occasions 1
   (b) some occasions 2
   (c) none 3

6. Rate yourself on how much you believe in Vietnamese versus American (Western) values about marriage, dating, families, education etc.

1	2	3	4	5
mostly Vietnamese Beliefs				mostly Western beliefs

Acculturation index is adopted from Gupta, A., Kumar, A., & Stewart, D.E. (2002).

Appendix E

Information Sheets Given to Immigrant Women after the Study

What is Cervical Cancer?

The cervix is a ring of muscle at the top of the vagina. It is the entrance to the womb. During childbirth the cervix expands until it is wide enough to let the baby out. The surface of the cervix facing into the vagina is covered with a type of skin which can become cancerous, and may become cervical cancer.

How Can I Detect Cervical Cancer?

The Pap test is used to screen women for cancer of the cervix. The Pap test reliably detects early abnormal cell changes that could lead to cervical cancer. In the United States, the use of the Pap test as a screening tool for cervical cancer has dramatically increased cure rates. You should have your first Pap test within 3 years of the onset of sexual intercourse or at age 21. You should continue to have regular annual Pap tests until you are 65 to 70 years of age and have had 3 normal Pap tests within the last 10 years. The frequency for having Pap tests depends on your risk factors for cervical cancer.

During a Pap test, a small sample of cells from the surface of the cervix is collected by a health professional. The cells are examined for abnormalities that may indicate cancer or changes that could lead to cancer. Cervical cancer has well-defined stages, and the chance of a cure is much higher when it is detected before it has spread from the cervix to other parts of the body.

Several factors, such as having mutiple partners, having human immunodeficiency virus (HIV), and having sexual intercourse before 18 years of age, increase a woman's risk of developing cervical cell changes that can lead to cancer of the cervix.

What is Breast Cancer?

The breast is a gland designed to make milk. The lobules in the breast make the milk, which then drains through the ducts to the nipple.
Like all parts of your body, the cells in your breasts usually grow and then rest in cycles. The periods of growth and rest in each cell are controlled by genes in the cell's nucleus. The nucleus is like the control room of each cell. When your genes are in good working order, they keep cell growth under control. But when your genes develop an abnormality, they sometimes lose their ability to control the cycle of cell growth and rest. An abnormality of cell growth in the breast can lead to breast cancer.

How Can I Detect Breast Cancer?

A breast exam by a doctor helps find lumps that women may miss with their own self-exams. While it's true that most lumps are found by women themselves, the abnormality in a breast can be so difficult to feel that only someone with experience would recognize it. Lumps, thickening, asymmetry—changes in your breasts that you may not notice or think are "normal"—may be detected by a doctor who examines many breasts regularly. Studies show that regular self-exam, *combined* with an annual exam by a doctor, improves the chances of detecting cancer early.

There are two different stages of testing that a doctor uses. Screening tests (such as an annual mammogram) look for signs of disease in women without symptoms; they should be part of every healthy woman's routine. Diagnostic tests (such as magnetic resonance imaging [MRI], blood tests, or bone scans) become part of the picture when breast cancer is suspected or has been diagnosed.

Mammograms are probably the most important tool doctors have to help them diagnose, evaluate, and follow women who've had breast cancer. Safe and highly accurate, a mammogram is an X-ray photograph of the breast. The technique has been in use for about thirty years.
Mammograms don't prevent breast cancer, but they can save lives by finding breast cancer as early as possible.

Where Can I Find Resources to Obtain Pap Smears or Mammograms?

Ask your physician or healthcare provider to refer you to a specialist that is trained to do mammograms or Pap smears. Remember, maintaining your health now will prove to be important in the long run, so do not be embarrassed to ask your doctor questions.

If you do not have a regular healthcare provider, or if you have financial problems, call the Bon Secours assistance system at (804) 359-9355. You will have the option to undergo an eligibility screening to see if you qualify for free Pap smears or mammograms if you do not have financial resources to screen elsewhere.